throughout the whole of Chinese history there are various hints about *Tunkin* and *Cochin-China*. *Mailla*, in the 'Histoire générale de la China,' furnishes some notices, as well as *Abel Remusat's* 'Du Royaume de Camboge,' in the 'Nouvelles Mélanges Asiatiques,' *Berghaus*' 'Karte von Hinter Indien,' and 'Memoirs,' evince the diligent geographer; and *Ritter* is a laborious and very careful compiler.

XIII.—*Geographical Notes on the Nile.* By Professor Paul Chaix, Corresponding Member of the Royal Geographical Society, Geneva.

[Read March 12, 1849.]

Clot Bey says, in his 'Tableau de l'Egypte,' that the level of the Nile at Cairo is 40 French feet above the Mediterranean, 287 feet at Syout, 357 feet at Thebes, and 543 feet five leagues lower down than Assouan. According to the Duke of Ragusa ('Voyage en Orient') the fall of the river is 6 metres between Benisouef and Abou-Girgé. Unfortunately neither of these authors has informed us by whom and by what means their levels have been measured. I am inclined to think the fall of the river has been much exaggerated, excepting the height at Cairo, which was actually measured by MM. Lepère and Jacotin during the flood of 1798. The Duke of Ragusa was provided with an apparatus for thermometric levels, but was deterred from publishing the results he had obtained by seeing that they led him to absurd conclusions.

Mr. Lambert, the present director of the Polytechnic School at Boulak, broke his barometer while he followed Mohammed Ali in his journey to Nubia—an accident of common occurrence. I am only indebted for having preserved mine entire to my never allowing it to be out of my hand. In order to compare my own measurements with the regular observations kept at the observatory at Boulak, I applied to the director, Mr. Lambert, who kindly forwarded me a translation of those observations. The building of the observatory has for its nucleus the old fort Donzelot, which the French had built close to the burial-ground at the northern extremity of the suburb of Boulak during their occupation of Cairo. It is well provided with astronomical and meteorological instruments, and hourly observations are made with the barometer and thermometer, which implies a degree of accuracy certainly not surpassed in any other observatory. Mr. Lambert intends to publish them both in Arabic and French, and they may be rendered very useful to travellers. Mr. Lambert told me that none before me had ever applied for them.

The regular observations are made with a barometer from Newman, No. 77, the basin of which is 9·770 metres above the threshold of the upper door of the Mekyas, that door being itself 1·020 metres above the inferior level of the first scale, or 10·250 metres above the zero in the scales. Lastly, the zero in the Mekyas is 3·342 metres above the low-water level in the Mediterranean Sea,* so that the basin of the barometer in the observatory is 23·362 metres above the sea. I now proceed to give the measurements I have taken, by comparison with those at Boulak, of the slope of the Nile and of the height of some points on both sides of the valley :—

	Height of the Nile at the Observatory at Boulak.	Height of the Nile above the Mediterranean.
	Mètres.	Mètres.
Gizeh and Boulak	−14·1	+9·2
Bedrecheïn, near Memphis	−13·7	9·6
Benisouef	− 2·2	21·1
Djebel Teir (under the)	− 1·1	22·2
Minieh	+12·0	35·3
Beni-Hassan	18·1	41·4
Rhôda, sugar manufactory	22·7	46·0
Sheïkh-Abou-Said, S. of Melawi	23·7	47·0
Hamra, the port of O'Syout	23·7	47·0
Akmim	32·6	55·9
Girgé	34·0	57·3
Between Béliéneh and Farshout	35·2	58·5
Kéneh	35·9	59·2
Thebes	44·8	68·1
Esneh	57·1	80·4
Edfou	64·5	87·8
Ombos	66·6	89·9
Between Ombos and Assouan	72·6	95·9
Assouan (Syène)	81·0	104·3
Philæ	100·0	123·3
Other Places.		
Cairo, on the Esbékyeh	−13·4	9·9
Cairo, observatory at Boulak	0·0	23·3
Beni-Hassan, tombs	73·4	96·7
Beni-Hassan, summit of the cliffs	128·8	152·1
O'Syout, upper range of tombs, 15 mètres under the summit of the cliffs	108·1	131·4
Thebes, entrance of the tomb of King Amunméses	203·9	227·2
Thebes, pass of Djebel Abd-el-Goorna	235·1	258·4
Thebes, Djebel Abd-el-Goorna	254·4	277·7
Ombos, at the greater temple	99·9	123·2
Assouan, quarries of quartz	114·6	137·9
Philæ, the lesser temple	107·7	131·0

Should my measurements prove exact, the fall of the river would be as follows :—

* Description of Egypt by the French commission, 'Etat Moderne,' vol. i., plates 14 and 23.

	Distances in Kilomètres.	Fall per Kilomètre.
		Centimètres.
From Philæ to Assouan (cataracts) . . .	13	146
From Assouan to Edfou	107	14
Edfou to Esneh	50	15
Esneh to Thebes (Louxor)	57	22
Thebes to Girgé	160	7
Girgé to O'Syout	154	7
O'Syout to Minieh	143	8
Minieh to Benisouef	133	11
Benisouef to Cairo (Boulak)	100	12
Boulak to Rosetta	249	4
Boulak to Damiette, the branch of Damiette being more meandering	258	$3\frac{3}{5}$

It is with reason considered difficult exactly to ascertain trifling differences of level in the lower part of a large river. The only means of avoiding those errors is to make the observations as numerous as possible. I have had the advantage of a series of observations in some places, such as Thebes, for instance; whilst I abstained from making use of others made under unfavourable circumstances near Dâshour, lower down Abou-Girgé, near El Fent and Aboutig, south of O'Syout. I am far from believing them free from error; but I think the best means of having them corrected or corroborated by other travellers is to publish them and to place them in the hands of the director of the observatory at Boulak, than whom no one is better fitted to make a complete table out of separate elements. I herewith transcribe my actual observations, in order to make it easier for a future traveller to select from them such figures as will best concur with his own, and to take averages from a more complete set.

I confess that averages calculated from very discrepant elements, and used without examination, will lead to erroneous results; and I find nowhere a stronger proof of this than *Captain J. H. Lefroy's barometric and thermometric measurements of heights in North America.** It cannot be denied that averages taken from such different data as will be found here are liable to be wrong. For Lake Huron, one observation gives 521 feet, and the other 572. To Lake Superior, barometric measurements gave 560, 515, 751, and 803 feet; while by thermometric measure it would be only 457 or 496 feet. Lake Winnipeg, thermom. 433 and 923; Lake Athabasca, thermom. 54, 105, and 789; the Great Slave Lake, thermom. 184 and 607; the Lesser Slave Lake, thermom. 1696 and 2008 feet.

I often set aside such measurements as seem too discordant, or taken under atmospheric circumstances that made their accu-

* Journal of the Royal Geographical Society of London, vol. xvi. Part II.

racy doubtful. A long experience of barometric measurements, both in the Alps and in Italy, makes me confident, on the other hand, that the barometer may prove a very useful and accurate instrument when used discreetly. I may, perhaps, venture to give the following instance of a measurement I took on the 25th of June, 1840, with peculiar care and under a very propitious state of the weather. It was on the pass of Saint Guigues, north of Gap, in Dauphiné, which parts the waters of the Durance from those of the Drac. I compared first my barometer (Bunten, 348) with those used in the observatories at Marseilles and Geneva, and calculated the height of the pass by a comparison of my measurement with the corresponding simultaneous observations made at Marseilles and Geneva. By the first I found the pass to be 1272·50 metres above the level of the sea, and 1272·81 metres by the second.

BAROMETRIC MEASUREMENTS made in Egypt during the months of December, 1846, and January and February, 1847. Unless mentioned otherwise, the barometer (Bunten, No. 348) was hung 0·75 m. above the level of the water:—

	Month.	Day.	Hour.	Barometer Millimetres.	Thermometer Centigrade. Temperature of the Mercury.	Thermometer Centigrade. Temperature of the Air.	Sky and Wind.
					°	°	
Alexandria—1st story, Hotel d'Orient	Dec.	21	7	765·6	17·9	14·8	Vapours, W.
Ditto ditto	,,	,,	8	765·6	18·3	17·5	W.
Ditto ditto	,,	,,	9	765·7	18·6	16·2	W.
Ditto ditto	,,	,,	10	766·4	20·6	17·2	
Ditto ditto	,,	23	10	764·3	16·7	15·3	Cloudy.
Ditto ditto	,,	,,	11½	762·8	16·1	15·2	Cloudy.
Ditto ditto	,,	24	8	762·4	15·8	9·0	W.
Ditto ditto	,,	,,	9	763·0	15·2	10·4	
Ditto, on the Mahmoudyieh canal	,,	,,	11	763·6	15·2	14·3	
Terraneh	,,	28	9	766·5	15·65	13·65	Vapours.
Terraneh (between) and Wardan	,,	,,	2 p.m.	766·2	22·7	22·6	
Ditto ditto	,,	,,	3 p.m.	766·2	23·7	21·7	Light vapours.
Wardan (south of)	,,	29	7	769·3	15·8	12·6	
Ditto ditto	,,	,,	8	769·6	16·3	13·2	
Boulak	Feb.	15	7¼	761·2	20·4	10·0	Foggy, N.
Ditto	,,	,,	9¼	760·3	16·6	14·5	N. breeze.
Cairo, Hot. d'Orient, 2nd story	,,	16	11	764·4	17·1	16·5	N. breeze.
Ditto ditto	,,	,,	5 p.m.	763·7	17·1	16·0	
Ditto ditto	,,	17	8	764·7	13·7	10·3	N. breeze.
Ditto ditto	,,	18	8¼	765·1	16·2	12·5	
Ditto ditto	,,	,,	11	764·9	17·1	16·8	
Gizeh	,,	13	4 p.m.	763·6	24·9	24·7	S. breeze.
Ditto	,,	14	7¼	762·7	20·2	19·0	High wind, S.
Bedrechein, port of Memphis	,,	12	6 p.m.	763·8	20·8	19·1	
Ditto ditto	,,	13	7	763·9	15·7	8·1	
Ditto ditto	,,	13	8	764·5	13·4	10·6	
Ditto ditto	,,	,,	1 p.m.	764·1	21·2	24·4	
Dashour (Nile opposite the pyramids of)	,,	12	4 p.m.	764·9	23·0	21·2	
Benisouef	,,	11	10½	765·1	19·0	19·0	
Ditto	,,	,,	11¾	764·5	21·6	21·3	
Abou Girgé (between) and El Fent	,,	10	2 p.m.	764·5	21·0	20·4	
Djebel Teir, 4½ miles above the convent	,,	9	8½	766·3	15·5	14·5	N. breeze.
Ditto 2 miles above the convent	,,	,,	11	766·7	16·9	14·4	N. breeze.
Minieh uncertain	,,	8	1½ p.m.	761·2	25·2	25·7	Vapours, S.
Ditto ditto	,,	,,	3 p.m.	760·9	22·9	22·1	Vapours, S.
Ditto ditto	,,	,,	4½ p.m.	760·9	24·8	24·0	Clouds, N.
Beni-Hassan	,,	,,	7	761·3	15·4	11·2	Light vapours.
Ditto	,,	,,	11½	762·1	22·4	22·2	Light vapours, S.
Ditto Tombs	,,	,,	7¾	755·5	14·2	12·7	
Ditto ditto	,,	,,	8½	756·0	15·3	14·3	
Ditto summit of the cliff	,,	,,	9	751·8	20·6	14·8	S.

	Month.	Day.	Hour.	Barometer Millimetres.	Thermometer Centigrade. Temperature of the Mercury.	Thermometer Centigrade. Temperature of the Air.	Sky and Wind.
					○	○	
Rhôda, near Melawi	Feb.	7	3¼ p.m.	761·6	25·9	26·4	S.
Tomb of Sheikh Abou Said (Nile opposite) south of Melawi	,,	,,	..	762·0	22·9	24·7	Vapours, S.
Manfalout (between) and O'Syout	Jan.	6	8¼	764·8	15 3	10·3	Vapours.
Ditto ditto	,,	,,	10¼	763·8	14·7	14·5	Vapours, N.
O'Syout (Hamra, port of)	Feb.	5	6¼ p.m.	761·9	20·3	17·2	Vapours.
Ditto ditto	,,	6	6¼	763·0	17·2	4·3	
Ditto ditto	,,	,,	7	762·6	16·2	6·3	
Ditto ditto	,,	,,	11	763·5	20·6	16·4	
Ditto, upper range of tombs	,,	,,	10	752·3	15·8	15·8	
Aboutig	,,	5	11¼	763·5	16·8	15·9	N.
Djebel Sheikh el Harideh (6 miles above)	,,	3	6¼	763·3	15·8	7·1	
Ekmim (3 miles below)	Jan.	8	3 p.m.	758·8	16·2	16·4	Overcast.
Ditto ditto	Feb.	2	5 p.m.	761·5	22·6	21·3	
Ditto ditto	,,	2	2¼ p.m.	762 2	21·7	21·2	N.
Ditto ditto	,,	,,	3 p.m.	761·5	23·3	22·2	
Girgé, on shore	Jan.	9	2 p.m.	758·0	17·1	14·0	N.W.
Ditto, the river	,,	31	5¼ p.m.	763·7	..	18·8	N. breeze.
Ditto	Feb.	1	6¼	764·0	17·0	6·0	
Ditto ditto	,,	,,	5¼ p.m.	762·6	21·2	19·4	Clouds, N.W.
Béliéneh (between) and Sheikh Hamadé	Jan.	10	12¼	760·2	17·8	15·2	
Béliéneh	,,	31	2 p.m.	764·4	21·4	21·7	
Saklou Abou Zabat	,,	10	4¼ p.m.	759·8	20·5	16·2	
Béliéneh (between) and Farshout	,,	31	7	766·0	15·7	4·7	
Ditto ditto	,,	,,	10¼	767·0	14·8	14·9	
Farshout (between) and Kéneh	,,	30	12¼	764 3	19·1	17·3	
Ditto lower down	,,	,,	2¼ p.m.	764·3	22·2	20·8	
Kéneh (lower down)	,,	,,	9	765·2	13·8	12·4	Strong N. wind.
Kéneh	,,	29	7	759·2	12·2	9·9	
Ditto	,,	,,	12¼	759·7	16·4	16·7	
Thebes, below Gournah	,,	13	9	762·7	15·3	11·2	
Ditto ditto	,,	28	3 p.m.	758·4	21·2	20·4	
Ditto, opposite Gournah	,,	13	11	762·7	17 4	15·6	
Ditto, Gournah, on shore	,,	26	5¾ p.m.	757·6	17·7	16·4	High wind N.
Ditto ditto the river	,,	27	6¾	760·5	14·4	5·2	
Ditto ditto ditto	,,	,,	1 p.m.	759·6	20·6	20·2	Breeze N.
Ditto, opposite Karnak	,,	28	6¾	759·7	13·7	5·6	
Ditto ditto	,,	,,	7¾	759·4	12·4	6·8	
Ditto ditto	,,	,,	12	759·4	15·8	14·9	
Ditto, opposite Louxor	,,	13	12¼	761·1	17·1	16·2	
Ditto ditto	,,	,,	4¼ p.m.	760·5	19·2	17·7	
Ditto, entrance of tomb No. 10 of Amunmeses, Vale of Kings	,,	27	10	753·5	23·4	15·5	N. breeze.
Ditto, Pass of Sheikh Abd-el-Gournah, between the Vale of Kings and that of Assasif	,,	,,	12	743·4	18·9	13·6	
Ditto, summit of Djebel Sheikh Abd-el-Gournah, east of the pass	,,	,,	12	741·2	17·1	13·0	N.
Hermonthis	,,	14	9	761·8	15·5	13·2	
Esneh	,,	16	8	757·6	16·4	15·0	Cloudy.
Ditto	,,	,,	5 p.m.	755·1	19·5	17·7	Clouds, N. breeze.
Ditto	,,	25	8	758·4	16·9	13·6	Cloudy.
Ditto	,,	,,	10¼	758·6	16·2	14·7	
Edfou	,,	24	12	758·4	17·7	17·4	Cloudy.
Ditto (short distance above)	,,	,,	8¼	759·0	16·2	15·3	
Ditto	,,	18	8¼	757·0	17·2	14 4	N.
Djebel Selseleh (on shore)	,,	23	12	758·7	23·3	19·8	N.
Ombos, at the great temple	,,	22	2 p.m.	755·3	20·9	20·6	
Ditto, the river uncertain	,,	,,	3¾ p.m.	757·3	20·8	19·2	N.
Ditto (a little above)	,,	19	8¼	758·9	18 2	12·8	Vapours.
Ditto (higher up)	,,	,,	1 p.m.	757·6	19·6	20·8	Cloudy.
Ditto ditto	,,	,,	3 p.m.	756·5	21·6	20·3	
Assouan	,,	20	7¼	757·0	17·7	10·5	
Ditto	,,	,,	4¼ p.m.	755·5	22·2	19·4	Clouds.
Ditto	,,	21	7	754·6	18·0	15·2	N., a few clouds.
Ditto (quartz quarries, 2 miles north)	,,	,,	8¼	753·4	16·6	16·2	N.
Philæ, lesser temple	,,	20	11¾	754·5	19·6	19·3	
Ditto	,,	,,	1½ p.m.	754·6	20·4	20·0	

As the corresponding observations made at Boulak would be useless except to one who would undertake a new mode of calculating mine, I abstain from giving them here. I must apprise, however, any future traveller that, in order to have a complete correspondence, he ought to observe his instruments 25 minutes after every hour in the day, such as 1 h. 25 m., 2 h. 25 m., this being the precise time they are made at Boulak.

The waters of the Nile are quite as remarkable for constancy of temperature as for coolness, agreeable taste, and wholesome qualities. The reader will best judge of the first point from the following table, in which I have inserted the time and place of observation, as well as the temperature of the atmosphere.

OBSERVATIONS on the Temperature of the Water of the Nile.

	Month.	Day.	Hour.	Open Air.	Water.
				Centigrade.	
				°	°
Terraneh . . .	December	28	9	13·6	15·3
Ditto . . .	,,	,,	2 p.m.	22·6	16·1
Wardan . . .	,,	29	7	12·6	15·4
Dashour . . .	February	12	4 p.m.	21·2	17·7
Minieh . . .	,,	8	1½ p.m.	25·7	16·6
O'Syout . . .	January	6	8½	10·3	15·8
Ditto . . .	,,	7	8¼	10·0	15·7
Ekmim . . .	February	2	3 p.m.	22·2	16·2
Girgeh . . .	January	9	2 p.m.	14·0	15·5
Béliéneh . . .	,,	10	7½	7·5	15·1
Ditto . . .	,,	,,	12½	15·2	15·8
Ditto . . .	,,	31	2 p.m.	21·7	15·2
Saklou Abou Zabat .	,,	,,	4¼ p.m.	16·2	15·8
Thebes . . .	,,	13	9	11·2	14·8
Ditto . . .	,,	,,	4 p.m.	17·7	16·2
Esneh . . .	,,	16	5 p.m.	17·7	15·8
Silsilis . . .	,,	23	8	14·2	15·4
Ombos . . .	,,	19	8¼	12·8	15·7
Ditto . . .	,,	,,	12	20·8	16·2
Ditto . . .	,,	,,	2½ p.m.	20·3	16·2
Ditto . . .	,,	22	3½ p.m.	19·2	16·2
Assouan . . .	,,	20	4 p.m.	19·4	16·2

The Nile flows, according to Clot Bey, at the rate of two miles an hour during the dry season, and three during the floods, which degrees of speed are equal to 0·77 and 1·23 metres in a second. They are not much at variance with the measurements taken by Linant Bey previous to his great undertaking to raise the waters at the head of the Delta, as they are given to us by the Duke of Ragusa ('Voyage en Orient,' vol. iii. p. 354). According to Linant Bey, the breadth, measured at a short distance below the point where they part during the dry season, would be, for the Rosetta, or western branch, 435·57

metres, with an average speed of 0·795 metre in a second; and in the eastern, or Damietta branch, 203·55 metres, with a speed of 0·814 metre. On the contrary, the speed increases to 1·385 and 1·154 metres in a second during the floods.

The mean depth at low water is 2·66 metres in the western, and 4·96 metres in the eastern branch; giving to the first a section of 1158·61 square metres, with a volume of 920 cubic metres of water in a second, and to the eastern branch a section of 1009·60 square metres, with a volume of 822 cubic metres. The body of water flowing during the greatest floods would be 5536·086 cubic metres a second through the Rosetta branch, and 2629·979 cubic metres through the Damietta branch.

According to these measures, the Nile gives 1742 cubic metres of water per second at low water, and 8,166,065 during the flood, without taking into consideration the waters absorbed by the lands and by evaporation above the head of the Delta—a body of water that would be 4600 times as large as the first; and it would thus require less than 14 hours to fill up the basin of our Lake of Geneva, with a superficies of 545 millions of square metres, and a mean depth of 80 metres. I cannot help doubting the perfect accuracy of the measures which lead to such prodigious results.

M. Girard, a French engineer, found half-a-century ago that the Nile poured 21,000 cubic feet or 719·8 cubic metres of water in a second at Cairo at low water—a quantity which, although considerable, is far from 1742 cubic metres, as given above by Mr. Linant. M. Girard's measurements, repeated at Manfalout in the month of March, 1799, gave a speed of 0·75 metre a second at the surface of the water, from which he estimated the average speed of the whole body of water to be 0·60 metre a second. The breadth was found to be 678 metres; the surface of the section 1129 square metres; and the volume 678 cubic metres in a second. The body of water was found to be 679 cubic metres at O'Syout, on the 28th of March, 1799. From the close resemblance of these various results, one feels inclined to think them pretty near the truth. Last of all, M. Girard found the speed of the waters to be 1·97 metres a second during the floods, and the whole body of water 10,247 cubic metres *—a quantity far below that of 8,166,065, as given by Mr. Linant. It is, however, very large when compared with other rivers. The Rhône, in the winter time, gives 235 cubic metres before it enters Lyon; 320 after it has been increased by the Saône; and 456 above Avignon. In the summer, when

* Girard, 'Observations sur la Vallée du Nil,' vol. ii. p. 207-211, Description of Egypt.

it is highest, the same river carries in a second a body of 482 square metres of water out of the Lake of Geneva, and 649 before it leaves the territory of Switzerland.

As, however, a comparison of the Rhône with the Nile may be thought too ambitious, I may be allowed to mention the Neva, the enormous size of which will be confirmed by all who have once seen it. Its depth is 54 feet at the eastern end of St. Petersburgh; its speed much greater than that of the Nile; and its breadth equal to the Bosphorus. Still, from the very careful measures taken in 1825 by General Destrein, the body of water is 116,000 cubic feet in a second.* or 4036 cubic metres—a quantity still 2000 times less than that of the Nile, as given by Mr. Linant.

The inferior level to which the waters sunk in 1798, 1799, and 1800 was regularly 3 cubits and 10 digits of the scale in the nilometre at Rhôda, or 1·848 above zero.† That zero itself is 3·342 metres above the low-water level of the Mediterranean Sea, which shows the lowest level of the Nile to be still 5·19 metres above the sea, and 4 metres below the level I observed in February.

During the three years the French kept Egypt under their rule, the floods reached 17 cubits 10 digits, 16 cubits 2 digits, and 18 cubits 3 digits above the zero in the Mekyas at Rhôda, which implied an actual rise of 7·58 metres, 6·85 metres, and 7·96 metres for those three years. A rise of 8 metres is considered as boding fine crops; 7 metres make them but indifferent; while a rise of 9 metres is considered as injurious to some places. It is 6·5 metres at Manfalout,‡ and 1·22 metres only at Rosetta and Damietta. The height of the flood increases as the valley becomes more contracted—a proportion quite necessary, as the banks are higher in the Saïd than in the middle country.

French engineers have found that the level of the soil does not rise more than 126 millimetres in a century from the muddy deposits. That quantity is not the same everywhere. Sir Gardner Wilkinson§ estimates approximately the depth of the soil to have increased 9 English feet near Elephantine in the space of 1700 years, 7 feet at Thebes, 3 feet 10 inches at Heliopolis and Cairo, and a trifling amount at Rosetta. This is equal to 160 millimetres in a century at Elephantine, 126 at Thebes, and 69 at Cairo. Sir Gardner Wilkinson's actual

* *Vide* Journal of Royal Geographical Society, vol. v. p. 3.

† While it sinks to that level, it preserves a depth of 4·6 metres.

‡ Wilkinson, 'Modern Egypt.'

§ 'On the Present and Former Levels of Egypt,' Journal of the Royal Geographical Society, London, vol. ix. p. 432.

survey of the country fully corroborates those reasons by which Volney proved there had been, during historic times, no change either in the outline of the coast, the mouths of the river, or in the extent of the Delta. Some travellers have even asserted that it had sunk.*

The bed of the river is enclosed within banks, the height of which increases as you travel farther south. I found them in January 10 or 12 feet above the water, reaching even 25 and 30 feet beyond Thebes. The banks are generally steep, and in some places overhang the river. Contrary to the general rule, they are higher than the flat country at a distance from the water—so much so that they are seldom covered by the floods, while the level of the country is 4 metres lower in the neighbourhood of O'Syout. A time will perhaps come when those differences will be lessened by the accumulation of mud.

"The priests told me," says Herodotus (Second Book of his 'Histories'), "that in the time of Moeris the Nile irrigated all Egypt below Memphis as often as it rose only 8 cubits (4·2 metres), and this, too, although no more than 900 years had elapsed since the time of Moeris's death. But nowadays the Nile does not flood that same extent of land unless it rises at least 15 or 16 cubits." From these words many have been led to fear that the time will come when the land of Egypt, gradually raised by the muddy deposits above the level of the floods, will become barren, and the villages no more converted into islands, as they were in the days of Herodotus. But we must bear in mind that the Nile, as long as it preserves the same body of waters, raises the bottom of its bed in the same ratio as it does its banks, and that, covering now a greater extent of country, it increases the quantity of arable lands in Upper and Middle Egypt. By digging the soil at the base of the oldest buildings in the ruins of Thebes, Sir G. Wilkinson found the width of arable land increased 1900 feet west of the colossal statues of Amunoph III. in a space of 3260 years, being raised more than 2 metres at the same time. The result has very likely been the same on the eastern bank.

* According to Prof. Chaix the general fall of the Nile between Philæ and Cairo is very great, when compared with that of other large rivers, being about 78 feet per mile between Philæ and Assouan, where the cataracts occur. The observations of Prof. Chaix extend over a distance of about 721 miles (according to his data in kilomètres and reckoning from Rosetta), which is equal to 3½ times the length of the Thames; those of Sir Gardner Wilkinson (lately read before this Society) extend to Gebel Berkel, or somewhere about the same distance. A comparison of the results obtained by these two geographers might be desirable. Further up the Nile observations of its altitude become more scanty, and at Khartûm terminate altogether; the Bahr el Azrek is, however, measured from Rosetta to its source, a distance, according to Mr. Petermann, of 2830 miles.—Ed.

The most certain idea to be derived from Herodotus's words is, that in his time *a rise of* 15 *or* 16 *cubits was necessary to water the land*, which is equal to 7·8 metres and 9·2 metres, if we reckon that Herodotus used the royal cubit of 525 millimetres; or 6·8 metres and 7·2 metres, if the vulgar cubit of 450 millimetres. As these quantities are still to be found as the actual rise of the Nile, they give us a proof of Herodotus's accuracy. As the change has been but trifling within the twenty-three centuries elapsed since his visit to Egypt, I see no reason to believe that it had been so much greater (according to the priests) during the nine centuries previous to his journey. They had, besides, an interest in foretelling as impending that dreaded barrenness which could only be arrested by their prayers and sacrifices.

XIV.—*The Isle of Skyros.* By THOMAS GRAVES, Esq., Captain of H.M.S. Volage. Communicated by Rear-Admiral Sir Francis Beaufort.

[Read March 27, 1849.]

ALL the accounts that have been left of the Isle of Skyros by the ancient historians and geographers have been so well epitomised by Dr. Cramer in his 'Ancient Greece,' and Tournefort and Colonel Leake have so faithfully described the position of the town, and of the ancient remains still to be traced in its neighbourhood, that it would be presumptuous in me to alter their language or to add to their statements; and therefore, in the following notices, I shall only attempt to bring down their descriptions to the present day, or to supply such facts as were not within their reach to obtain. But in order to introduce the reader fairly into the island, I shall begin with a quotation from the Colonel's 'Travels in Greece.'

"The town of St. George stands within a few miles of the N.E. extremity of the island, and covers the northern and western sides of a high and rocky peak" (605 feet above the sea), "which to the eastward falls steeply to the beach." The plain to the N.W. "is grown with corn, vines, and figs, and is refreshed by a small perennial stream, watering many gardens as well in the plain as a little valley above it, where the oaks and planes, the walnut and other fruit-trees, which shade the bank of the stream, give this little district an appearance very different from that of the dry and naked Cyclades." It may be added that, in comparison with them, this island, in point of scenery and capability, is a Paradise.

"On the table-summit of the rock which crowns the town are the ruins of a castle, inclosing many houses, which are now